

Supplemental Digital Content 4. Associations of the two physical activity metrics* with markers of bone health with non-wear during the night imputed as zeros for both intensity gradient and average acceleration (wave 9, N = 220)

	Model 1		Model 2		Model 3		Result
	Coefficient	95% CI	Coefficient	95% CI	Coefficient	95% CI	
Hip aBMD							
Average acceleration (mg)	0.005	0.001, 0.010	0.005	0.001, 0.010	0.003	-0.002, 0.009	
^a Intensity gradient	0.120	0.044, 0.196	0.128	0.053, 0.203	0.106	0.018, 0.194	Independent effect of intensity
Average acceleration X intensity gradient					-0.007	-0.024, 0.010	
Total Body BMC (minus head)							
Average acceleration (mg)	13.528	3.897, 23.159	14.683	7.190, 22.175	11.426	1.980, 20.872	Independent effect of volume
^a Intensity gradient	218.338	39.374, 397.300	256.107	126.277, 385.937	166.403	12.034, 320.772	Independent effect of intensity
Average acceleration X intensity gradient					-10.692	-36.702, 15.317	
^bSpine aBMD							
Males (N = 96)							
Average acceleration (mg)	0.009	0.004, 0.013	0.009	0.005, 0.013	0.007	0.003, 0.012	Independent effect of volume
^a Intensity gradient	0.137	0.034, 0.239	0.153	0.055, 0.251	0.111	0.004, 0.218	Independent effect of intensity
Average acceleration X intensity gradient					-0.006	-0.022, 0.010	
Females (n = 124)							
Average acceleration (mg)	0.001	-0.004, 0.007	0.002	-0.004, 0.007	-0.001	-0.006, 0.005	
^a Intensity gradient	0.045	-0.048, 0.138	0.063	-0.036, 0.162	0.071	-0.032, 0.174	
Average acceleration X intensity gradient					-0.003	-0.026, 0.189	
Hip femoral neck cross-sectional area							
Average acceleration (mg)	0.022	0.006, 0.039	0.023	0.007, 0.039	0.017	-0.003, 0.038	
^a Intensity gradient	0.410	0.104, 0.716	0.449	0.186, 0.712	0.335	0.004, 0.665	Independent effect of intensity
Average acceleration X intensity gradient					-0.032	-0.086, 0.023	
Hip femoral neck section modulus							
Average acceleration (mg)	0.012	0.003, 0.025	0.014	0.004, 0.024	0.011	0.000, 0.023	Independent effect of volume
^a Intensity gradient	0.224	0.021, 0.426	0.231	0.056, 0.406	0.139	-0.064, 0.343	
Average acceleration X intensity gradient					-0.009	-0.046, 0.027	

*Activity metrics (average of waves 6-9): Intensity gradient and average acceleration (both calculated with imputing of zeros for non-wear during the night)

^aIntensity gradient: Gradient of the regression line from log-log plot of intensity (x) and minutes accumulated (y).

^bAnalyses run separately by sex due to a significant sex X activity interaction term. For the sex-specific analyses only, consistently non-significant co-variates (height and age) were dropped.

Model 1 adjusted for sex and mass only. Model 2 adjusted for sex, age, height, mass, years from PHV (all from wave 9), the proportion of the 24h cycle the monitor was worn and mean age for physical activity measures. Model 3 further adjusted for alternate activity metric and the product term (average acceleration X intensity gradient) was entered to investigate interactive effects

95% CI = 95% confidence interval

Scores were centered before entry into the analysis. Physical activity interaction terms were calculated from the centered scores.

Significant associations are denoted in bold.